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DERMATOPHYLLUM, THE CORRECT NAME FOR *CALIA* (FABACEAE)

KANCHI N. GANDHI
Harvard University Herbaria,
Harvard University, Cambridge, MA 02138
gandhi@oeb.harvard.edu

MICHAEL A. VINCENT
W.S. Turrell Herbarium (MU)
Department of Botany
Miami University, Oxford, OH 45056
vincenma@muohio.edu

JAMES L. REVEAL
L.H. Bailey Hortorium
Department of Plant Biology
Cornell University, Ithaca, NY 14853-4301
jlr326@cornell.edu

ABSTRACT

The generic name *Dermatophyllum* Scheele (1848) is recognized as the correct name for what have been known as *Calia* Terán & Berland. (1832; non *Calea* L. (1763) and *Agastianis* Raf. (1838), *nom. illeg.* Five new combinations are required: **Dermatophyllum arizonicum**, **Dermatophyllum gypsophilum, Dermatophyllum gypsophilum** subsp. **guadalupense**, **Dermatophyllum secundiflorum**, and **Dermatophyllum purpusii**.

KEY WORDS: *Agastianis*, *Calea*, Asteraceae, *Calia*, *Dermatophyllum*, Fabaceae southwestern USA, Mexico

The genus *Dermatophyllum* Scheele was erected in 1848 with a single species, *D. speciosum* Scheele. This genus is being recognized here as a segregate of the larger, paraphyletic genus *Sophora*, comprising *Sophora* sect. *Calia* (Terán & Berland.) Rudd (Rudd 1972) (= *Sophora* sections *Arizoniatae* Tsoong and *Agastianis* (Raf.) Tsoong [Tsoong & Ma 1981]). It is considered distinct from *Sophora sensu stricto* by the following suite of characters: woody habit; thick, coriaceous leaflets; blue, violet or white flowers; calyx with obvious teeth or lobes; flattened to terete legumes; and a geographically restricted range. This distinction is supported by molecular data (Heenan et al. 2004; Lewis et al. 2005; Pennington et al. 2001; Wojciechowski et al. 2004), where *Calia* falls into a separate clade from *Styphnolobium* and other *Sophora* species. Four species are being recognized in *Dermatophyllum,* a genus ranging from the southwestern USA (Arizona, New Mexico, Texas) south into México (Chihuahua, Coahuila, Hidalgo, Nuevo León, Oaxaca, San Luis Potosí, Sonora, Tamaulipas, Zacatecas). Resurrection of this generic name followed a debate about the availability of *Calia* Terán & Berland. for this genus.

In early 2010, a question on the status of the parahomonyms *Calea* L. (1763; Asteraceae) and *Calia* Terán & Berland. (1832; Fabaceae) was submitted to the Nomenclature Committee for Vascular Plants for a ruling whether these two generic names are confusable. By a majority vote, the Committee concluded that these two names are confusable and that *Calia* is to be treated as a later homonym (Brummitt, 2011: 231–232). The Committee's voting was approved by the Eighteenth International Botanical Congress, held at Melbourne, Australia, in July 2011.

One reason for this matter being so long overlooked is that *Calea*, a large genus with some 110 species, is confined to warm parts of America (Mabberley 2008). On the other hand, *Calia* is a genus of four species and was long considered to be a synonym of *Sophora* L. until Yakovlev (1967) resurrected the name. Three recent works accept *Calia* (Sousa & Rudd 1993; Lewis & al. 2005; Mabberley 2008). Furthermore, Wojciechowski et al. (2004) placed *Calia* in its own clade and demonstrated its distinctiveness from *Sophora*. In fact, USDA-GRIN (2011) lists two of the five species to be economically important in the USA: *Calia arizonica* (S. Watson) Yakovlev and *Calia secundiflora* (Ortega) Yakovlev (also in Mexico).

Perhaps unaware of the existence of *Calia*, Rafinesque (1838) published the generic name *Agastianis* Raf., but as this name is itself superfluous and an illegitimate substitute for the nomenclaturally rejected name *Broussonetia* Ortega (1798), its adoption is not possible without a formal act of conservation. Alternatively *Dermatophyllum* Scheele (1848), which has been recognized as a taxonomic synonym of *Calia* (Rudd 1972; Lewis & al. 2005), can be used. Accordingly, the following new combinations are required.

Dermatophyllum arizonicum (S. Watson) Vincent, comb. nov. *Sophora arizonica* S. Watson, Proc. Amer. Acad. 11: 135. 1876. *Calia arizonica* (S. Watson) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 45. 1967 **TYPE: USA. Arizona**. Mojave Co.: Cactus Pass and on White Cliff Creek, 29 Jan 1854, *J.M. Bigelow s.n.* (holotype: GH! [photo DS!]; isotype: NY!).

Sophora formosa Kearney & Peebles, J. Wash. Acad. Sci. 29: 482. 1939. *Calia formosa* (Kearney & Peebles) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 45. 1967. *Calia arizonica* subsp. *formosa* (Kearney & Peebles) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 26: 109. 1968. *Sophora arizonica* var. *formosa* (Kearney & Peebles) Tsoong, Acta Phytotax. Sin. 18: 73. 1980. **TYPE: USA. Arizona**. Graham Co.: below foot of Frye Mesa, Pinaleno Mts., 15 mi SW of Safford, 24 Apr 1935, *B. Maguire 10993* (holotype: US!; isotypes: ARIZ, GH, NY!, UC!, UTC [2 sheets]!).

Typification of *Sophora arizonica* S. Watson rests on a specimen at GH with label data stating that the specimen (a single stem, mounted on a sheet with *E. Palmer 65* and *J.M. Bigelow 33*) was collected at White Cliff Creek and Cactus Pass. Since the holotype specimen has both names on a single label and only a single stem, it is not possible to separate the locations, and the specimen at NY (which is labeled "White Cliff Creek" and "January 29") is best considered an isotype, following McManus (1976). Torrey (1857) originally identified this collection as *Sophora speciosa* (Scheele) Benth.

Dermatophyllum gypsophilum (B.L. Turner & A.M. Powell) Vincent, comb. nov. *Sophora gypsophila* B. L. Turner & A. M. Powell, Phytologia 22: 419. 1972. **TYPE: MÉXICO. Chihuahua.** Along Highway 16, 20 mi S of Coyame, 7 Apr 1971, *A.M. Powell et al. 2072* (holotype: TEX!; isotypes: MEXU, US!).

Dermatophyllum gypsophilum (B.L. Turner & A.M. Powell) Vincent subsp. **guadalupense** (B.L. Turner & A.M. Powell) Vincent, comb. nov. *Sophora gypsophila* B.L. Turner & A.M. Powell var. *guadalupensis* Turner & Powell, Phytologia 22: 421. 1972. **TYPE: USA. Texas.** Culberson Co.: Near Dog Canyon on the J.C. Hunter Ranch, NW slopes of Guadalupe Mts., 26 Sep 1955, *P. Uzzell s.n.* (holotype: SRSC!).

Dermatophyllum secudiflorum (Ortega) Gandhi & Reveal, comb. nov. *Broussonetia secondiflora* Ortega, Nov. Rar. Pl. Descr. Dec. 5: 61, t. 7. 1798. *Calia secundiflora* (Ortega) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 45. 1967. *Cladrastis secundiflora* (Ortega) Raf.,

Neogenyton 1. 1825. *Sophora secundiflora* (Ortega) Lagerh. ex DC., Cat. Pl. Horti Monsp. 148. 1813. *Virgilia secundiflora* (Ortega) Cav., Icon. 5: 1. 1799. **TYPE: SPAIN.** Cultivated, Botanical Garden at Madrid "è seminibus missis per D. Sessé," *M. Lagasca s.n.* (lectotype: G-DC, **designated here**, based on annotations by R. McVaugh in herb. G-DC, fide Rudd 1968).

Calia erythrosperma Terán & Berland., Mem. Comis. Limites 13. 1832. **TYPE: USA. Texas.** Bexar Co.: "Habitat in Texas, prope S. Antonio de Béjar," *J.L. Berlandier s.n.* (lectotype: G, **designated here**.).

Dermatophyllum speciosum Scheele, Linnaea 21: 459. 1848. *Sophora speciosa* (Scheele) Benth., Boston J. Nat. Hist. 6: 178. 1850. **TYPE: USA. Texas.** Comal Co.: near New Braunfels ["Neubraunfels"], sin. dat., *F. Roemer s.n.* (lectotype: MO!, **designated here**; the original material seen by Scheele was destroyed during the Second World War).

Sophora secundiflora f. *xanthosperma* Rehder, J. Arnold Arbor. 10: 134. 1929. *Calia secundiflora* f. *xanthosperma* (Rehder) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 26: 107. 1968. **TYPE: USA. Texas.** Bexar Co.: San Antonio, Feb/Mar 1927, *L.W. Nuttall s.n.* (holotype: A!; isotypes: F!, PH!, UC!).

Calia secundiflora subsp. *albofoliolata* Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 26: 107. 1968. **TYPE: MÉXICO. Coahuila.** La Esmeralda, 19 Nov 1925, *S. V. Juzepczuk 671* (holotype: LE; isotype: F!).

Dermatophyllum purpusii (Brandegee) Vincent, comb. nov. *Sophora purpusii* Brandegee, Zoë 5: 235. 1906. *Calia purpusii* (Brandegee) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 45. 1967. **TYPE: MÉXICO. Coahuila.** Sierra de Parrás, Mar 1905, *C.A. Purpus 1076* (holotype: UC!; isotypes: F!, GH!, NY!, POM!, US!).

EXCLUDED SPECIES:

Sophora conzattii Standl., Contr. U.S. Natl. Herb. 23: 436. 1922. *Calia conzattii* (Standl.) Yakovlev, Trudy Leningradsk. Khim.-Farm. Inst. 21(4): 45. 1967. *Styphnolobium conzattii* (Standl.) M. Sousa & Rudd, Ann. Missouri Bot. Gard. 77: 575. 1990. **TYPE: MÉXICO. Oaxaca.** Cerro Espino near Pochutla, 24 Apr 1917, *C. Conzatti et al. 3171* (holotype: US! [photo CAS]).

Rudd (1972) speculated that *Sophora conzattii* was not best placed in the genus *Sophora*. The species was moved to *Calia* by Yakovlev (1967) but was later transferred to *Styphnolobium* (Sousa 1990; Sousa & Rudd 1993). Chromosome counts by Palamino et al. (1993) further support the placement of *St. conzattii* ($2n = 28$) in *Styphnolobium,* with *St. japonicum* ($2n = 28$), and differentiating it from *Dermatophyllum secundiflorum* ($2n = 18$).

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